

Coal Washing and Its Effect on Electricity Costs

- ❖ **Consensus on savings due to non coking / thermal coal washing **yet** to be demonstrated thru' model plants**
- ❖ **India continues to use ROM coal in TPS!**
- ❖ **No assurance of Quality of coal received at consumer end in India by TPS**

Coal Quality variations

- ❖ Coal is heterogenous material
- ❖ Variation in ROM coal quality -- Due to mining methods, seam variation, mining quality etc.,
- ❖ Coal washing absorbs the variations & can be designed to supply consistent washed coal to the power station
- ❖ Rejects quality will reflect variations in the input (ROM) coal
- ❖ BFBC boilers --Well suited to burn rejects with wide ranging ash contents up to 70 %
- ❖ Both washed coal & rejects to be utilised completely
- ❖ Ash only --- to ash pond

Coal Beneficiation

- ❖ **the effects of coal upgrading with the resultant supply of a more consistent fuel would be to increase the boiler efficiency by 1 to 2 percent, depending on extent of washing, over existing PCC boilers.**
- ❖ **It would make an even greater contribution where new and appropriately designed plant is built.**

Washability Studies

CMPDI, BHEL

- Coals from 12 mines were tested at CMPDI Ranchi in 1998 - Borehole sample
- BHEL / MSEB & CMPDI tested 45 MT of coal as per Australian / S.African standards in 1999 - For design purpose

Washability Results CMPDI -1998

Coal Field	% age of ash in washed coal	Clean coal Yield %	Ash content in rejects %
Singrauli	24 ± 1	78.0	66.5
Wardha	24 ± 1	75.0	76.0
Korba	24 ± 1	72.0	50.0
Singareni	24 ± 1	73.0	65.0
North Karanpura	30 ± 1	81.0	59.0
Talcher	30 ± 1	81.5	68.0
Rajmahal	34 ± 1	79.5	55.0
Jharia	34 ± 1	60.0	60.0
South Karanpura	34 ± 1	75.3	70.0
Ib valley	34 ± 1	60.0	57.0

Washability Studies - CMPDI (1998)

Washable to 34% ash		Washable to 30% ash		Washable to 25% ash	
Coal Field	Reserves Bn Tonnes	Coal Field	Reserves Bn Tonnes	Coal Field	Reserves Bn Tonnes
Rajmahal	11.7	Raniganj	19.2	Singrauli	9.2
Jharia	6.1	North Karanpura	13.0	Wardha	5.0
South Karanpura	4.9	Pench Kanhan	1.6	Korba	19.5
Kamptee, Silewara	1.6	Talcher	25.5	Singareni	10.1
Central India	9.4				
Ib valley	21.2				
Sub total	~55		~60		~44

Washability Results

BHEL ,MSEB & CMPDI (1999)

Mine	% ash in washed coal	Clean coal Yield %	Ash content in rejects %
Wani	24 ± 1	75.0	69.0
Ghuguse	24 ± 1	76.0	71.0
Padmapur	24 + 1	84.0	72.0
Wani	30 + 1	87.0	77.0
Ghuguse	30 + 1	88.0	76.0
Padmapur	30 + 1	95.0	77.0
Ghuguse	34 + 1	93.0	78.0
Wani	34 + 1	94.0	85.0
Padmapur	34 + 1	98.0	78.0

Previous studies are reconfirmed

Conclusion : Indian coals amenable to Washing

- 34-25 % Ash after washing with yield of 81-60%
- Average Ash content in the rejects about 63 %
- Broad Conclusion:

1/3 rd can be washed up to	25 % ash level
1/3 rd can be washed up to	30 % ash level
1/3 rd can be washed up to	34 % ash level

BHEL is willing to provide solutions :

- **Better & efficient Thermal power plants including AFBC/FBC solutions**
- **Coal washeries**